IN THE CLAIMS:

Please amend the claims as follows:

1. (Amended) A apparatus for removing a metal layer from a substrate, comprising:

a rotatable anode substrate support member configured to support a substrate;

a movable cathode fluid dispensing nozzle positioned above the anode substrate support member;

a power supply in electrical communication with the anode substrate support member and the cathode fluid dispensing nozzle; and

a system controller configured to rotate a substrate in a face up position on the rotable anode substrate support member, position the cathode fluid dispensing nozzle over a central portion of the substrate, dispense a metal removing solution from the cathode fluid dispensing nozzle onto the central portion of the substrate, and apply an electrical bias between the substrate and the cathode fluid dispensing nozzle.

2. The apparatus of claim 1, wherein the system controller comprises a microprocessor device in electrical communication with the power supply, a cathode fluid dispensing nozzle actuator, and an anode substrate support member motor, the microprocessor device being configured to receive user and system parameter input, and generate output control signals therefrom.

3. The apparatus of claim 2, wherein the system controller is configured to receive and control a plating circuit voltage.

4. The apparatus of claim 1, wherein the rotatable anode substrate support member comprises:

a rotatably mounted shaft in communication with a motor, the motor being configured to impart rotational motion to the shaft; and

a substrate support surface concentrically mounted to a distal end of the shaft, the substrate support surface being configured to receive a substrate in a face up position.

5. The apparatus of claim 4, wherein the substrate support surface further comprises an annular anode contact ring positioned about a perimeter of the substrate support surface, the anode contact ring having one or more electrical substrate contacts formed therein.

6. The apparatus of claim 5, wherein the anode contact ring further comprises an annular seal member positioned radially outward from the plurality of electrical substrate contacts.

7. The apparatus of claim 5, wherein the one or more electrical contacts are in electrical communication with a positive output of the power supply.

8. The apparatus of claim 1, wherein the cathode fluid dispensing nozzle is in electrical communication with a negative output of the power supply.

9. The apparatus of claim 1, wherein the substrate support member further comprises a substrate receiving surface having a plurality of apertures formed therein, each of the plurality of apertures being in communication with a vacuum source and configured to vacuum chuck the substrate to the substrate receiving surface.

10. (Amended) The apparatus of claim 1, wherein the cathode fluid dispensing nozzle is positioned at a distal end of an arm member in electrical communication with a negative terminal of the power supply, and the arm member is affixed to a distal end of a base member.

11. The apparatus of claim 10, wherein the system controller is configured to vary the radial position of the arm member in response to an increased voltage at the power supply.

12. The apparatus of claim 10, wherein the system controller is configured to monitor a voltage in a plating circuit and vary a radial position of the arm member when the monitored voltage exceeds a predetermined voltage threshold.

13. (Amended) The apparatus of claim 12, wherein the predetermined voltage threshold corresponds to removal of the metal layer from an area immediately below the cathode fluid dispensing nozzle.

14. The apparatus of claim 10, wherein the arm member further comprises a second fluid dispensing nozzle positioned intermediate the distal end and the base member, the second fluid dispensing nozzle being configured to dispense a neutralizing fluid onto the substrate at a point radially outward from the cathode fluid dispensing nozzle.

15. (Amended) The apparatus of claim 1, further comprising a fluid delivery system having at least one fluid source in communication with the cathode fluid dispensing nozzle.

16. The apparatus of claim 1, wherein the substrate support member further comprises a selectively actuated lift pin assembly positioned below the substrate support member, the lift pin assembly being configured to lift the substrate from the substrate support member for removal therefrom by a transfer robot.

17. The apparatus of claim 1, wherein the apparatus is a non contact apparatus.

18. The apparatus of claim 1, wherein the rotatable anode substrate support is configured to support a substrate in a face-up position and to electrically contact a backside of the substrate.

19. The apparatus of claim 1, wherein the cathode fluid dispensing nozzle is pivotally mounted and configured to be radially positioned over the metal layer of the substrate.

20. The apparatus of claim 1, wherein the controller is configured to regulate a radial position of the cathode fluid dispensing nozzle over the substrate.

21. (Amended) An apparatus for electrochemically removing a metal layer from a substrate surface, comprising:

a processing chamber having one or more monitors for determining plating circuit voltage and plating circuit resistance positioned therein;

a radially mounted nozzle positioned in the processing chamber; and

a microprocessor controller in communication with the nozzle, the microprocessor controller being configured to monitor at least one of the plating circuit voltage and the plating circuit resistance, and adjust a radial position of the nozzle while dispensing an electrolytic solution onto a substrate in order to deplate a metal layer therefrom when at least one of the plating circuit voltage and the plating circuit resistance exceeds a predetermined threshold.

22. (Amended) The apparatus of claim 21, wherein the radially mounted electrolyte dispensing nozzle is part of an electrolyte dispensing assembly that comprises:

a base member mounted to the processing chamber, the base member having a fluid conduit formed therein for communicating a fluid therethrough;

an elongated arm member pivotally mounted to the base member and having a substantially hollow interior portion forming at least one fluid conduit therethrough; and

at least one electrolyte dispensing nozzle mounted to a distal end of the arm member and being in fluid communication with the at least one fluid conduit.

23. (Amended) The apparatus of claim 22, wherein the at least one electrolyte dispensing nozzle further comprises:

a first electrolyte dispensing nozzle mounted on a distal end of the arm member, the first electrolyte nozzle being configured to dispense a metal removing electrolytic solution onto the substrate; and

a second fluid dispensing nozzle mounted on the arm member between the first fluid dispensing nozzle and the base member, the second fluid dispensing nozzle being configured to dispense a neutralizing solution onto the substrate at a position radially outward from the center of the substrate relative to the first electrolyte dispensing nozzle.

24. (Amended) The apparatus of claim 21, further comprising a rotable anode substrate support member positioned in the processing chamber, wherein the rotatable anode substrate support member comprises:

a rotatable shaft member having a substantially hollow interior portion;

a disk shaped substrate receiving surface concentrically mounted to the shaft member; and

a stepping motor in communication with the rotatable shaft member, the motor being configured to impart rotational motion to the shaft member in order to rotate the disk shaped substrate receiving member.

25. The apparatus of claim 24, wherein the rotatable anode substrate support member further comprises an annular anode contact ring positioned proximate a perimeter of the anode substrate support member, the anode contact ring being configured to electrically engage a backside of the substrate.

26. The apparatus of claim 25, wherein the anode contact ring comprises:

an insulative annular body portion;

a plurality of conductive electrical contacts radially positioned about the circumference of the annular body portion and extending therefrom; and

an annular seal member positioned radially outward from the plurality of conductive contacts, the annular seal member being configured to create a dry contact configuration.

27. (Amended) The apparatus of claim 26, further comprising a power supply having an anode output in electrical communication with the anode substrate support member and a cathode output in electrical communication with the electrolyte dispensing nozzle, wherein the plurality of conductive electrical contacts are cooperatively in electrical communication with an anode output of the power supply.

28. (Amended) The apparatus of claim 23, further comprising a power supply having an anode output in electrical communication with the anode substrate support member and a cathode output in electrical communication with the electrolyte dispensing nozzle, wherein the first electrolyte dispensing nozzle is in communication with a cathode output of the power supply.

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29. (Amended) The apparatus of claim 21, further comprising a rotable anode substrate support member positioned in the processing chamber and a power supply having an anode output in electrical communication with the anode substrate support member and a cathode output in electrical communication with the electrolyte dispensing nozzle, wherein the power supply forms a deplating circuit with the anode substrate support member, a deplating solution, and the electrolyte dispensing nozzle.

30. (Amended) The apparatus of claim 29, wherein the controller is configured to monitor a deplating circuit voltage and pivotally adjust a radial position of the electrolyte dispensing nozzle relative to a center of the substrate when the deplating circuit voltage exceeds a predetermined threshold voltage.

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31. (Amended) The apparatus of claim 21, further comprising a rotable anode substrate support member positioned in the processing chamber, wherein the rotatable anode substrate support member comprises a lift pin assembly configured to lift a substrate from the substrate receiving surface for removal from the processing chamber by a robot.

32. (Amended) The apparatus of claim 21, wherein the controller is configured to monitor a parameter of a plating circuit and adjust a radial position of the electrolyte dispensing nozzle in response to the parameter exceeding a predetermined threshold.

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33. The apparatus of claim 32, wherein the parameter is at least one of a plating circuit voltage and a plating circuit resistance.

34. A method for removing a metal layer from a substrate, comprising:

rotating a substrate in a face up position on a rotatable substrate support member;

positioning a cathode fluid dispensing nozzle over a central portion of the substrate;

dispensing a metal removing solution from the cathode fluid dispensing nozzle onto the central portion of the substrate; and

applying an electrical bias between the substrate and the cathode fluid dispensing nozzle.

35. (Amended) The method of claim 34, further comprising adjusting a radial position of the cathode fluid dispensing nozzle outward from the central portion of the substrate in response to a parameter r of the electrical bias exceeding a predetermined threshold.

36. The method of claim 34, wherein applying the electrical bias further comprises electrically connecting a negative output of a power supply to the cathode fluid dispensing nozzle and electrically connecting a positive output of the power supply to the substrate.

37. The method of claim 36, wherein connecting the positive output of the power supply to the substrate comprises electrically contacting a backside conductive layer on the substrate with an anode contact ring positioned on the substrate support member.

38. The method of claim 37, wherein electrically contacting the backside conductive layer further comprises electrically engaging the backside conductive layer with a plurality of radially positioned conductive electrical contacts formed into the anode contact ring.

39. (Amended) The method of claim 38, wherein each of the plurality of radially positioned conductive electrical contacts are in electrical communication with the positive output of the power supply.

40. (Amended) The method of claim 35, wherein adjusting a radial position of the cathode fluid dispensing nozzle comprises:

monitoring at least one of a plating circuit voltage and a plating circuit resistance with a system controller; and

adjusting the radial position of the cathode fluid dispensing nozzle when at least one of the plating circuit voltage and the plating circuit resistance exceeds the predetermined threshold.

41. (Amended) The method of claim 35, wherein adjusting the radial position of the cathode fluid dispensing nozzle outward comprises:

removing the metal layer from a first annular area on the surface of the substrate, wherein the first annular area corresponds to the area covered by the cathode fluid dispensing nozzle during a rotation of the substrate; and

adjusting the radial position of the nozzle outward to a second annular area on the surface of the substrate, wherein the second annular area immediately circumscribes the first annular area and has the metal layer remaining thereon.

42. The method of claim 34, further comprising depositing a backside conductive layer on a bevel portion of the substrate extending onto a portion of a backside of the substrate

43. The method of claim 34, further comprising vacuum chucking the substrate to the rotatable substrate support member and electrically contacting the substrate.

44. (Amended) The method of claim 34, wherein applying an electrical bias comprises electrically engaging the substrate with a contact ring.

45. The method of claim 44, wherein the contact ring electrically engages a production surface of the substrate proximate a perimeter thereof.

46. A method for controlling an electrochemical deplating process, comprising:

monitoring at least one of a plating circuit voltage and a plating circuit resistance;

adjusting a radial position of a nozzle dispensing an electrolytic solution onto a substrate in order to deplate a metal layer therefrom when at least one of the plating circuit voltage and the plating circuit resistance exceeds a predetermined threshold.

47. The method of claim 46, wherein monitoring at least one of a plating circuit voltage and a plating circuit resistance comprises utilizing a microprocessor-based controller in electrical communication with at least one electrical sensor.

48. The method of claim 46, wherein adjusting the radial position of a nozzle dispensing an electrolytic solution comprises selectively pivoting an arm member supporting the nozzle in order to position the nozzle over a circumferential band of the substrate where the metal layer is to be removed.

49. (Amended) The method of claim 48, further comprising incrementing through increasing sized and abutting circumferential bands across a surface of the substrate.

50. (Amended) The method of claim 46, comprising:

securing a substrate having the metal layer thereon to a substrate support member in a face up position;

rotating the substrate support member;

applying an electrical bias to a plating circuit; and

dispensing an electrolytic solution calculated to remove the metal onto a surface of the substrate.

51. The method of claim 50, wherein securing the substrate further comprises electrically contacting the substrate with a plurality of radially positioned electrical contacts.

52. The method of claim 50, wherein securing the substrate further comprises vacuum chucking the substrate against an anode contact ring having a plurality of radially positioned electrical contacts formed therein.

53. The method of claim 52, wherein the plurality of radially positioned electrical contacts are in electrical communication with a positive output of a power supply.

54. The method of claim 51, wherein electrically contacting the substrate further comprises electrically engaging a backside conductive layer deposited on a bevel portion of the substrate and extending onto a portion of a backside of the substrate.

REMARKS

This is intended as a full and complete response to the Restriction Requirement dated October 18, 2002, having a shortened statutory period for response set to expire on November 18, 2002. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-54 are pending in the application and are subject to restriction and/or election requirement.

Restriction to one of the following inventions is required under 35 U.S.C. § 121:

I. Claims 1-33, drawn to apparatus for electrochemically removing a metal layer from a substrate surface, classified in class 205, subclass 640+.